MTS Range

Operating Instructions

Limited Warranty & Limitation of Liability

CROPICO guarantees this product for a period of 1 year. The period of warranty will be effective at the day of delivery.

Due to a policy of continuous development CROPICO reserves the right to alter the equipment specification and description outlined in this publication without prior notice and no part of this publication shall be deemed to be part of any contract for the equipment unless specifically referred to as an inclusion within such contract.

Disposal of Old Product

This product has been designed and manufactured with high quality materials and components that can be recycled and reused.

When the crossed out wheelie bin symbol is attached to a product it means the product is covered by the European Directive 2002/96/EC.

Please familiarise yourself with the appropriate local separate collection system for electrical and electronic products.

Please dispose of this product according to local regulations. Do not dispose of this product along with normal waste material. The correct disposal of this product will help prevent potential negative consequences for the environment and human health.

User Note:
These Operating Instructions are intended for the use of Competent Personnel.

Contents

Introduction

The MTS1A and MTS2 Milliohmmeter Test Standards are designed for easy calibration of low resistance ohmmeters and Kelvin/Thompson Bridges.

The MTS3 Milliohmmeter Test Standard is designed for easy calibration of low resistance ohmmeter type RCP2A.

True four terminal resistance standards are selected using a specially constructed switch with low thermal contacts for potential selections and low resistance contacts for current selection.

The resistance standards may be switched between + full scale, true four terminal zero, and - full scale (current terminals reversed).

Operation

Important Note: If possible, the MTS Range of Test Standards should be used in a temperature controlled environment.

NOTES: *Always refer to manufacturer's calibration procedure before attempting to calibrate an instrument.*

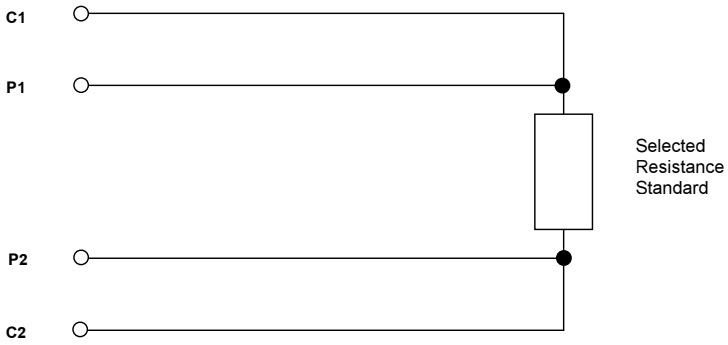
When taking measurements, always wait for a steady reading.

The instrument to be calibrated is connected to the current and potential terminals of the MTS Standard. A chassis connection is also provided, although this is not required when calibrating Cropico ohmmeters. The only requirement for the current cables is that they can be used up to 10A. The potential cables should be low thermal emf leads (preferably pure multi-stranded copper with crimped copper connections).

Three operating modes are possible as follows:

1. **+Full Scale**

   In this mode, the Standard is connected as follows:



   This is the standard configuration for calibrating an instrument for full scale value.

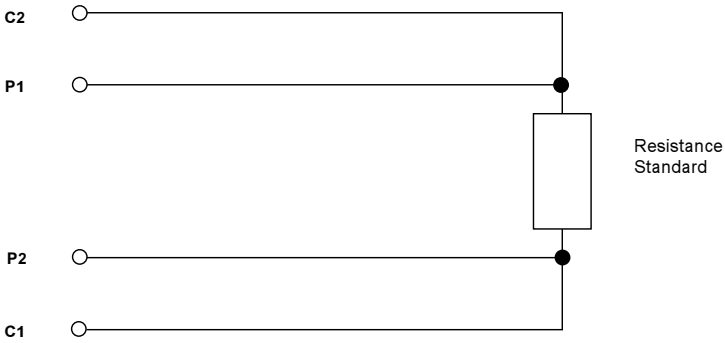
2. Zero

In this mode, the Cl and C2 terminals are short circuited, with no current flowing through the resistance standards. This gives a true four terminal zero

3. -Full Scale

This facility has been especially designed for calibrating Cropico Ohmmeter type DO4A and D07. It may, however, be suitable for use with some other makes of Ohmmeter.

In this mode, the current connections to the resistance standard are reversed as follows:



The potential terminals remain unchanged, and therefore this mode is unsuitable for testing Kelvin/Thompson Bridges.

Technical Information

Terminals: 4 mm. binding posts will accept spade tags and 4 mm. banana plugs. Low thermal emf types are used for the potential

Working Temp: 5 …20 … 40°C

Storage Temp.: 5 ... +50°C

Switches: Special combination switch with low thermal gold/silver contacts for the potential selection and low resistance contacts for the current selection.

Size: 215x88x250mm. (WHD)
½ 19" Rack 2U High

467 x 374 x 216 mm. packed in card carton.

Mass 2.8 kg. approx. (3.5 kg. packed in card carton)

MILLIOHMMETER TEST STANDARD TYPE MTS1A

Resistance Value (Ohms)	Uncertainty of adjustment at 20°C	Dissipated Max Watts	Current Max Amps	Typical Temp. Coefficient 15 to 20°C
100 kΩ	±0.01%	0.1	1 mA	<10 ppm
10 kΩ	±0.01%	0.1	3 mA	<10 ppm
1 kΩ	±0.01%	0.6	25 mA	<10 ppm
100 Ω	±0.01%	0.6	75 mA	<10 ppm
19 Ω	±0.01%	0.43	150 mA	<10 ppm
10 Ω	±0.01%	0.45	212 mA	<10 ppm
1.9 Ω	±0.01%	0.475	500 mA	<10 ppm
1 Ω	±0.01%	0.56	750 mA	<10 ppm
100 mΩ	±0.01%	0.625	2.5 A	<10 ppm
10 mΩ	±0.01%	0.25	5 A	<10 ppm
1 mΩ	±0.01%	0.1	10 A	<10 ppm

MILLIOHMMETER TEST STANDARD TYPE MTS2

Resistance Value (Ohms)	Uncertainty of adjustment at 20°C	Dissipated Max Watts	Current Max Amps	Typical Temp. Coefficient 15 to 20°C
400 kΩ	±0.01%	0.1	0.45 mA	<10 ppm
40 kΩ	±0.01%	0.1	1.5 mA	<10 ppm
4 kΩ	±0.01%	0.1	5 mA	<10 ppm
400 Ω	±0.01%	0.1	15 mA	<10 ppm
40 Ω	±0.01%	0.1	50 mA	<10 ppm
4 Ω	±0.01%	0.1	150 mA	<10 ppm
400 mΩ	±0.01%	0.1	500 mA	<10 ppm
40 mΩ	±0.01%	0.1	1.5 A	<10 ppm
4 mΩ	±0.1%	0.4	10 A	<10 ppm
400 µΩ	±0.1%	0.04	10 A	<10 ppm

MILLIOHMMETER TEST STANDARD TYPE MTS3

Resistance Value (Ohms)	Uncertainty of adjustment at 20°C	Current Max 2 seconds Amps	Typical Temp. Coefficient 15 to 20°C
5 Ω	±0.05%	1 A	<10 ppm
500 mΩ	±0.05%	10 A	<10 ppm
50 mΩ	±0.05%	10 A	<10 ppm
5 mΩ	±0.1%	10 A	<10 ppm

NOTES

MTS1A & MTS2

The stated currents are for the reference conditions stated. A 25% overload is permissible for short periods of time.

MTS3

Is designed for calibration of the Microhmmeter type RCP2A the max. current stated above is only valid for a pulse current as produced by the RCP2A . The MTS3 is not intended to be used for measurements where a continuous current is used.